Ins a4 ~~**Patent Claims**~~
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1. Nucleic acid comprising a sequence selected from the group consisting of

   (a) the sequence of SEQ ID NO: 1,

   (b) subsequences of the sequence defined under (a) which are at least 14 basepairs in length,

   (c) sequences which hybridize with the sequence defined under (a),

   (d) sequences which have at least 70% identity to the sequence between position 43 and position 1368 of the sequence defined under (a),

   (e) sequences which are complementary to the sequence defined under (a), and

   (f) sequences which, owing to the degeneracy of the genetic code, encode the same amino acid sequence as do the sequences defined under (a) to (d).

2. Vector comprising at least one nucleic acid according to Claim 1.

3. Vector according to Claim 2, characterized in that the nucleic acid molecule is operatively linked to regulatory sequences which ensure expression of the nucleic acid in pro- or eukaryotic cells.

4. Host cell comprising a nucleic acid according to Claim 1 or a vector according to Claim 2 or 3.

5. Host cell according to Claim 4, characterized in that it is a pro- or eukaryotic cell.

6. Host cell according to Claim 5, characterized in that the prokaryotic cell is E. coli.

7. Host cell according to Claim 5, characterized in that the eukaryotic cell is a mammalian or insect cell.

8. Polypeptide encoded by a nucleic acid according to Claim 1.

9. Polypeptide which exerts the biological function of an acetylcholine receptor β subunit and which comprises an amino acid sequence having at least 40% identity to the sequence of SEQ ID NO: 2.

10. Acetylcholine receptor comprising at least one polypeptide according to Claim 8 or 9.

11. Method of producing a polypeptide according to Claim 8 or 9, which comprises

(a) culturing a host cell according to one of Claims 4 to 7 under conditions which ensure expression of the nucleic acid according to Claim 1, and

(b) obtaining the polypeptide from the cell or the culture medium.

12. Antibody which reacts specifically with the polypeptide according to Claim 8 or 9 or with the receptor according to Claim 10.

13. Transgenic invertebrate containing a nucleic acid according to Claim 1.

14. Transgenic invertebrate according to Claim 13, characterized in that it is Drosophila melanogaster or Caenorhabditis elegans.

15. Method of generating a transgenic invertebrate according to Claim 13 or 14, wherein a nucleic acid according to Claim 1 or a vector according to Claim 2 or 3 is introduced.

16. Transgenic progeny of an invertebrate according to Claim 13 or 14.

17. Method of generating a nucleic acid according to Claim 1, with the following steps:

    (a) full chemical synthesis in a manner known per se or

    (b) chemical synthesis of oligonucleotides, labelling the oligonucleotides, hybridizing the oligonucleotides with DNA of an insect cDNA library, selecting positive clones and isolating the hybridizing DNA from positive clones or

    (c) chemical synthesis of oligonucleotides and amplification of the target DNA by means of PCR.

18. Regulatory region which naturally controls, in insect cells, the transcription of a nucleic acid according to Claim 1 and which ensures specific expression.

19. Method of finding new active compounds for crop protection or pharmaceutical active compounds for the treatment of humans or animals, in particular compounds which alter the conductive properties of receptors according to Claim 10, with the following steps:

(a) providing a host cell according to any of Claims 4 to 7,

(b) culturing the host cell in the presence of a compound or of a mixture of compounds, and

(c) detecting altered conductive properties.

20. Method of finding a compound which binds to receptors according to Claim 10, with the following steps:

(a) contacting a host cell according to any of Claims 4 to 7, a polypeptide according to Claim 8 or 9 or a receptor according to Claim 10 with a compound or a mixture of compounds under conditions which allow the interaction of at least one compound with the host cell, the polypeptide or the receptor, and

(b) determining the compound(s) which bind(s) specifically to the receptors.

21. Method of finding compounds which alter the expression of receptors according to Claim 10, with the following steps:

(a) contacting a host cell according to any of Claims 4 to 7 or a transgenic invertebrate according to Claim 13 or 14 with a compound or a mixture of compounds,

(b) determining the receptor concentration, and

(c) determining the compound(s) which specifically affect(s) receptor expression.

22. Use of a nucleic acid according to Claim 1, of a vector according to Claim 2 or 3, of a host cell according to any of Claims 4 to 7, of a polypeptide according to Claim 8 or 9, of an acetylcholine receptor according to Claim 10, of an antibody according to Claim 12, of a transgenic invertebrate according to Claim 13 or 14 or of a regulatory region according to Claim 18 for finding new active compounds for crop protection or pharmaceutical active compounds for the treatment of humans or animals.